

What is claimed:

1. A method of enhancing the bioactivity of a substrate comprising the steps of applying to the surface of the substrate inorganic material comprising calcium phosphate containing compounds using relatively low temperature and bombarding the applied inorganic material into the substrate using inert ions forming an alloy of the substrate material and the inorganic material.
2. A method according to claim 1 in which the inorganic material is applied by sputtering.
3. A method according to claim 2 in which the inorganic material is embedded into the substrate surface a distance of up to 5000 angstroms.
4. A method according to claim 3 in which the substrate is formed of one of C.P. titanium and titanium alloy.
5. A method according to claim 3 in which the substrate is formed of ceramic.
6. A method according to claim 3 in which the substrate is formed of resin.
7. A method according to claim 3 in which the inorganic material is hydroxylapatite.
8. A method according to claim 7 further comprising the step of applying an additional layer of hydroxylapatite to the alloy while continuously bombarding the additional layer with an augmenting ion beam.

9. A method according to claim 8 in which the additional layer of hydroxylapatite is between approximately 500 and 10,000 angstroms thick.

10. An article made according to the method of claim 3.

11. A dental implant made according to the method of claim 4.

12. An orthopedic implant made according to the method of claim 4.